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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/530,629	06/19/2000	MICHAEL DADD	SHP-PT058	1975

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EXAMINER

PEREZ, GUILLERMO

ART UNIT PAPER NUMBER

2834

DATE MAILED: 02/19/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/530,629

Applicant(s)

DADD, MICHAEL

Examiner

Guillermo Perez

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 January 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☒ Interview Summary (PTO-413) Paper No(s). 19.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

The after final amendment filed on January 9, 2002 has been entered and an action addressing the new limitations follows.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1-2, 5, and 11-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Griffiths et al. (GB 1,396,692).

Referring to claim 1, Griffiths et al. disclose an electromechanical transducer comprising:

a stator (1) having a plurality of coils (5); and

a magnetic assembly (3) having a plurality of magnetic poles (9) there being flux linkage between the coils (5) and the magnetic poles (9) defining a magnetic circuit for imparting relative linear movement between the stator (1) and the magnetic assembly (3); wherein

the stator (1) and the magnetic assembly (3) are arranged for relative linear movement such that relative rotational movement is constrained (page 2, lines 37-42); and

at least one of the plurality of coils (5) and at least one of the plurality of magnetic poles (9) are arranged to describe a helical path about the axis of the transducer (page 2, lines 6-9); whereby

the magnetic circuit includes a helical component (page 2, lines 6-9).

Referring to claim 2, Griffiths et al. disclose that the stator (1) includes a plurality of core elements (2) on which the plurality of coils (5) are mounted and associated pole pieces.

Referring to claim 5, Griffiths et al. disclose that the plurality of coils (5) of the stator (1) and the plurality of magnetic poles (9) of the magnetic assembly (3) are arranged to describe helical paths about the axis of the transducer (page 2, lines 115 through page 3, line 9).

Referring to claim 11, Griffiths et al. disclose that at least one of the stator (1), the magnetic assembly (3) and the magnetic circuit member consists of a plurality of laminations stacked together (page 2, lines 115-118).

Referring to claim 12, Griffiths et al. disclose that the planes of the individual laminations describe a helical path about the axis of the transducer (page 2, lines 125-127).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffiths et al. in view of Schuster (U. S. Pat. 5,079,458).

Griffiths et al. substantially teach the claimed invention except that it does not show a magnetic circuit member provided on the side of the magnetic assembly opposite to the side of the magnetic assembly facing the stator. Griffiths et al. do not disclose that the magnetic circuit member is integral with the rotor and moves as part of the rotor.

Schuster discloses a magnetic circuit member (5) provided on the side of the magnetic assembly (14) opposite to the side of the magnetic assembly facing the stator (2). Schuster discloses that the magnetic circuit member (5) is integral with the rotor (1)

and moves as part of the rotor (1). Schuster's invention has the purpose of closing the magnetic circuit between the inner poles of the magnetic assembly.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Griffiths et al. and provide it with the magnetic assembly disclosed by Schuster for the purpose of closing the magnetic circuit between the inner poles of the magnetic assembly.

3. Claims 6, 9, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffiths et al. in view of Kling (U. S. Pat. 4,126,797).

Griffiths et al. substantially teach the claimed invention except that it does not show that the angle of the helical path of the plurality of coils is different to the angle of the helical path of the plurality of magnetic poles of the magnetic assembly. Griffiths et al. do not disclose that two transducers of opposite handedness are coupled thereby constraining rotational movement of the magnetic assemblies relative to the stator. Griffiths et al. do not disclose a compressor having an electromechanical transducer as claimed in claim 1, connected to a piston and cylinder arrangement.

Kling discloses that the angle of the helical path of the plurality of coils is different to the angle of the helical path of the plurality of magnetic poles of the magnetic assembly (column 13, lines 41-53). Kling discloses that two transducers of opposite handedness are coupled thereby constraining rotational movement of the magnetic assemblies relative to the stator (figure 20 and column 13, lines 8-23). Kling discloses a compressor having an electromechanical transducer as claimed in claim 1, connected to a piston and cylinder arrangement (column 20, lines 30-50). Kling's invention has the

purpose of providing a driving device which guarantees a drive which is variable over a wide range of speeds and a wide performance range in addition to simple construction and economical production.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Griffiths et al. and provide it with the helical configuration and apply it to a compressor connected to a piston and cylinder arrangement as disclosed by Kling for the purpose of providing a driving device which guarantees a drive which is variable over a wide range of speeds and a wide performance range in addition to simple construction and economical production.

4. Claims 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffiths et al. in view of Beale et al. (U. S. Pat. 5,525,845).

Griffiths et al. substantially teach the claimed invention except that it does not show that at least one of the plurality of core elements and the associated pole pieces of the stator, the magnetic circuit member, and intervening segments interposed between the magnetic poles of the rotor consists of high permeability material. Griffiths et al. do not disclose that the rotor does not form a closed cylinder.

Beale et al. disclose that at least one of the plurality of core elements and the associated pole pieces of the stator, the magnetic circuit member, and intervening segments interposed between the magnetic poles of the rotor consists of high permeability material (column 7, lines 9-11). Beale et al. disclose that the rotor (132) does not form a closed cylinder. The invention of Beale et al. has the purpose of producing the reciprocating motion of the rotor.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Griffiths et al. and provide it with the material and rotor configuration disclosed by Beale et al. for the purpose of producing the reciprocating motion of the rotor.

5. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffiths et al. in view of Davey et al. (EP 0028144A1).

Griffiths et al. disclose an electromechanical transducer as described on item 1 above. However, Griffiths et al. do not disclose that holding means are additionally provided to constrain at least rotational relative movement between the magnetic assembly and the stator. Griffiths et al. does not disclose that the holding means is in the form of one or more spiral springs.

Davey et al. disclose that holding means (31) are additionally provided to constrain at least rotational relative movement between the magnetic assembly (16) and the stator (13). Davey et al. disclose that the holding means (31) is in the form of one or more spiral springs (31). The invention of Davey et al. has the purpose of creating axial flexibility and distributing stresses equally.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Griffiths et al. and provide it with the holding means disclosed by Davey et al. for the purpose of creating axial flexibility and distributing stresses equally.

6. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Griffiths et al. in view of Prymak (U. S. Pat. No. 4,616,151).

Griffiths et al. disclose an electromechanical transducer as described on item 1 above.

Pryjmak discloses that at least one of the stator (figure 1), the magnetic assembly and the magnetic circuit member consists of a plurality of laminations (9) stacked together. Pryjmak discloses that the planes of the individual laminations (9) describe a helical path about the axis of the transducer. Pryjmak's invention has the purpose of reducing the excitation of resonant case vibration modes and producing quieter motor operation.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Griffiths et al. and provide it with the stator configuration disclosed by Pryjmak for the purpose of reducing the excitation of resonant case vibration modes and producing quieter motor operation.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Griffiths et al. in view of Cook et al. (U. S. Pat. No. 5,719,451).

Griffiths et al. disclose an electromechanical transducer as described on item 1 above. However, Griffiths et al. do not disclose that the magnetic assembly consists of a single component having isotropic magnetization characteristics whereby the magnetic assembly has a non-binary magnetic field distribution.

Cook et al. disclose that the magnetic assembly (25) consists of a single component having isotropic magnetization characteristics whereby the magnetic assembly (25) has a non-binary magnetic field distribution (column 5, lines 12-22). Cook

et al. has the purpose of providing opposed magnetic poles at portions of the cylindrical faces at opposite ends of the cylinder.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Griffiths et al. and provide it with the isotropic magnetization characteristics disclosed by Cook et al. for the purpose of providing opposed magnetic poles at portions of the cylindrical faces at opposite ends of the cylinder.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Griffiths et al. in view of Delson et al. (U. S. Pat. No. 6,002,184).

Griffiths et al. discloses an electromechanical transducer as described on item 1 above. However, Griffiths et al. do not disclose a torque transducer for measuring the axial force generated by the electromechanical transducer.

Delson et al. disclose a torque transducer (129) for the purpose of measuring the axial force generated by the electromechanical transducer.

It would have been obvious at the time the invention was made to modify the electromechanical transducer of Griffiths et al. and provide it with a torque transducer as disclosed by Delson et al. for the purpose of measuring the axial force generated by the electromechanical transducer.

Response to Arguments

Applicant's arguments with respect to claims 1-16 have been considered but are moot in view of the new ground(s) of rejection.

This communication is in response to the telephone interview dated February 5, 2002. The issues raised by the Applicant's representative were considered and the After Final amendment filed on January 9, 2002 was entered.

In response to Applicant's argument that the laminations are skewed and not helical it must be noted in Figure 3 that Pryjmak shows a portion of a helical pattern of the stacked laminations. The helical structure shown by Pryjmak shows the limitations as claimed.

The torque transducer of Delson et al. can be used to determine axial force of the axial transducer by knowing the angular torque (with the torque transducer) and distance from the angular torque center to the point where the axial torque is applied.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of


the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Perez whose telephone number is (703) 306-5443. The examiner can normally be reached on Monday through Thursday and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308 1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305 3432 for regular communications and (703) 305 3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 0956.

Guillermo Perez
February 11, 2002


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